

forest of western Madagascar. *Journal of Avian Biology* 29:17–24.

KUSHLAN, J. A. 1978. Commensalism in the Little Blue Heron. *Auk* 95:677–681.

MAXSON, J. AND A. D. MAXSON. 1981. Commensal foraging between Hairy and Pileated woodpeckers. *Journal of Field Ornithology* 52:62–63.

RAND, A. L. 1954. Social feeding behavior of birds. *Fieldiana-Zoology* 36:1–71.

ROBBINS, M. B. 1981. Two cases of commensal feeding between passerines. *Wilson Bulletin* 93:391–392.

WILLIS, E. O. 1972. The behavior of Spotted Antbirds. *Ornithological Monographs* 10.

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## Interspecific Egg-dumping by a Violet-green Swallow in an Active Western Bluebird Nest

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**ABSTRACT.**—We observed a Violet-green Swallow (*Tachycineta thalassina*) laying an egg in an active Western Bluebird (*Sialia mexicana*) nest. The Western Bluebird male and not the female, was aggressive to the Violet-green Swallow but the swallow remained to lay the egg. This is the first documented incidence of which we are aware involving altricial interspecific egg-laying during the nestling phase. We suggest the timing of this event was more consistent with incidental egg deposition, or egg-dumping, than brood parasitism or nest usurpation. *Received 13 December 2005. Accepted 24 July 2006.*

Observations of birds laying eggs in nests of other species are of interest because this behavior, when timed appropriately and directed at nests where parents fail to recognize foreign eggs and offspring, may be the starting point for evolution of interspecific brood parasitism. Other explanations for this behavior are nest usurpation and egg-dumping, which is the deposition of an egg into another species' nest without any specific adaptive function. We collected video footage of a Vi-

olet-green Swallow (*Tachycineta thalassina*) laying an egg in an active Western Bluebird (*Sialia mexicana*) nest containing nine-day-old nestlings at Hastings Natural History Reservation, Carmel Valley, California (36° 22' N, 121° 34' W). Nest boxes have been monitored at Hastings and nearby ranches as part of a long-term study of Western Bluebirds since 1983 (Dickinson et al. 1996). Western Bluebirds are the primary box-nesting species at this study site, but other secondary cavity nesters use nest boxes at lower frequencies, including Ash-throated Flycatchers (*Myiarchus cinerascens*), Oak Titmice (*Baeolophus inornatus*), House Wrens (*Troglodytes aedon*), Bewick's Wren (*Thryomanes bewickii*) and Violet-green Swallows (Table 1).

We conducted a study of parental feeding behaviors during spring 2005 using video to identify patterns of resource allocation within

TABLE 1. Frequency of nest box use by secondary cavity-nesting species at Hastings Natural History Reservation, Carmel Valley, California, from 1983 to 2004.

Species	Nests (n)	Total use (%)
Western Bluebird	1,860	69
Ash-throated Flycatcher	298	11
Oak Titmouse	204	8
House Wren	175	7
Violet-green Swallow	122	5
Bewick's Wren	2	<1
Total nesting attempts (at least one egg)	2,661	100

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the nest. The day before filming we replaced the natal nest box and nest material with a box of the same dimensions containing a Western Bluebird nest, but with a Plexiglas side to accommodate the camera. A video camera and small LED light were positioned within a sleeve connected to the nest box on the morning of filming, which began at approximately 0530 hrs PST. Tapes were set on short play and recorded for a period of 120 min. During the first recording an experimenter collected simultaneous observational data on parental activity from a blind approximately 30 m away. Following tape completion, a second tape was inserted to record an additional 120 min of nestling provisioning observations. No additional observational data on parental activity were collected from outside the nest.

### OBSERVATIONS

We collected video data on 27 May 2005 from a Western Bluebird nest containing five nine-day-old nestlings and a single unhatched Western Bluebird egg. In this instance, the time stamp on the video unit failed, and observations were timed using the video counter and calibrated using the corresponding observational data. The video nest watch began at 0520:00 hrs. At 0711:53 hrs, a female Violet-green Swallow entered the nest box and sat in the far left corner at the top of the nest cup. At 0712:46, the Western Bluebird male entered the box and proceeded to peck at the Violet-green Swallow's head six times before leaving the nest box at 0713:03. The Violet-green Swallow responded to the pecking attack by tucking her head down and remaining still. After 5 sec, the female Western Bluebird fed a nestling from the box entrance. She appeared to ignore the Violet-green Swallow and entered the box only to turn around, leaving 11 sec after arrival. The adult male and female Western Bluebirds fed the nestlings twice more while the swallow was in the nest box, but did so without entering the nest. At 0721:41, the first video tape ended and the second was inserted. We estimated the time from the ending of the first tape and beginning of the second to be approximately 30 sec, and added that time to our calculations. The Western Bluebird adults did not enter the box again while the Violet-green Swallow female was present. At approximately 0733 hrs, the Vio-

let-green Swallow left the nest box, leaving a white egg on the outer rim of the nest cup where she had been sitting. During the afternoon the video nest box and nest were replaced with the natal nest box and nest; the Violet-green Swallow egg was also transferred. When we returned to the nest the following day the Violet-green Swallow egg was lying broken in the bottom of the nest. There was no second Violet-green Swallow egg.

### DISCUSSION

Three hypotheses are possible explanations for our observations: nest usurpation, brood parasitism, and interspecific egg-dumping. Nest usurpation is a possible explanation given that Western Bluebirds and Violet-green Swallows are both secondary cavity nesters whose breeding times overlap (Brown et al. 1992, Guinan et al. 2000). However, in this instance, timing of egg-laying and the observed behavior of the Violet-green swallow was not consistent with nest usurpation. Violet-green Swallows in our population use nest boxes at a low frequency (Table 1), but are common and presumably use natural cavities as nesting sites. Previously described nest usurpation interactions between Violet-green Swallows and Western Bluebirds do not match the behavior we observed. In Arizona, Brawn (1990) observed large groups of Violet-green Swallows taking over a nest box defended by a Western Bluebird, but a single Violet-green Swallow, such as we observed, was not successful in displacing Western Bluebirds. Successful use of a Western Bluebird box by a single pair of Violet-green Swallows has been observed, but was preceded by interspecific provisioning of the bluebird's young (Eltzroth and Robinson 1984).

Brood parasitism can also be ruled out due to improper timing of laying. We found no record of either intra- or interspecific brood parasitism by Violet-green Swallows in the literature (Brown et al. 1992). The placement of the egg outside the nest cup would be inconsistent with brood parasitism behavior.

It is more likely the Violet-green Swallow laid the egg because she was physiologically committed to do so but was unable to lay in her original nest, a behavior known as "egg-dumping" (Wiens 1971). There are many documented cases of interspecific egg-dumping in

avian species not known for brood parasitic behavior (Bailey 1886, Holcomb 1967, Wiens 1971, Gustafson 1975, Cannell and Harrington 1984, Littlefield 1984, Carter 1987, Sealy 1989). Females may lay in another cavity because they are unable to approach their own cavity at the time of laying, due to the presence of a predator, nest usurpation, or other disturbance. Based on monitoring of nest boxes at Hastings Reservation, 11.2% of 98 Violet-green Swallow nests with at least one egg failed before hatching from 1983 through 2005. This small incidence of nest failure during laying and incubation is only partially attributable to predation, but indicates that infrequent nest predation or disturbance during laying could account for the behavior we observed. Although there are no data on conspecific nest usurpation in Violet-green Swallows, nest usurpation has been well documented in Tree Swallows (*Tachycineta bicolor*) (Leffelaar 1985).

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#### LITERATURE CITED

BAILEY, H. B. 1886. The Brown Thrush laying in the nest of the Wood Thrush. *Auk* 4:78.

- BRAWN, J. D. 1990. Interspecific competition and social behavior in Violet-green Swallows. *Auk* 107: 606–608.
- BROWN, C. R., A. M. KNOTT, AND E. J. DAMROSE. 1992. Violet-green Swallow (*Tachycineta thalassina*). The birds of North America. Number 14.
- CANNELL, P. F. AND B. A. HARRINGTON. 1984. Interspecific egg dumping by a Great Egret and Black-crowned Night Herons. *Auk* 101:889–891.
- CARTER, M. D. 1987. An incident of brood parasitism by the Verdin. *Wilson Bulletin* 99:136.
- DICKINSON, J. L., W. D. KOENIG, AND F. A. PITELKA. 1996. Fitness consequences of helping behavior in the Western Bluebird. *Behavioral Ecology* 7:168–177.
- ELTZROTH, E. K. AND S. R. ROBINSON. 1984. Violet-green Swallows help Western Bluebirds at the nest. *Journal of Field Ornithology* 55:259–261.
- GUINAN, J. A., P. A. GOWATY, AND E. K. ELTZROTH. 2000. Western Bluebird (*Sialia mexicana*). The birds of North America. Number 510.
- GUSTAFSON, J. R. 1975. A Sage Sparrow egg in a Black-throated Sparrow nest. *Auk* 92:805–806.
- HOLCOMB, L. C. 1967. Mourning Dove egg in nest of catbird and robin. *Wilson Bulletin* 79:450–451.
- LEFFELAAR, D. AND R. J. ROBERTSON. 1985. Nest usurpation and female competition for breeding opportunities by Tree Swallows. *Wilson Bulletin* 97: 221–224.
- LITTLEFIELD, C. D. 1984. Sandhill Crane incubates a Canada Goose egg. *Wilson Bulletin* 96:719.
- SEALY, S. G. 1989. Incidental "egg dumping" by the House Wren in a Yellow Warbler nest. *Wilson Bulletin* 101:491–493.
- WIENS, J. A. 1971. "Egg-dumping" by the Grasshopper Sparrow in a Savannah Sparrow nest. *Auk* 88: 185–186.

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## Western Bluebird Captures a Western Fence Lizard

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**ABSTRACT.**—I observed a male Western Bluebird (*Sialia mexicana*) capture a western fence lizard (*Sceloporus occidentalis*), the first reported incidence of vertebrate-directed raptorial behavior in the Western Bluebird. There are no previously published reports of Western Bluebirds capturing vertebrate prey, although

there is one previous report of a Western Bluebird carrying an unidentified lizard in the manner of a prey item, and a few reports of predation on vertebrates by the congeneric Eastern Bluebird (*Sialia sialis*). *Received 9 January 2006. Accepted 28 June 2006.*

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Western Bluebirds (*Sialia mexicana*) are primarily insectivorous during the breeding season, and rely upon berry crops during winter (Guinan et al. 2000). Individual Eastern Bluebirds (*Sialia sialis*), a congeneric species,